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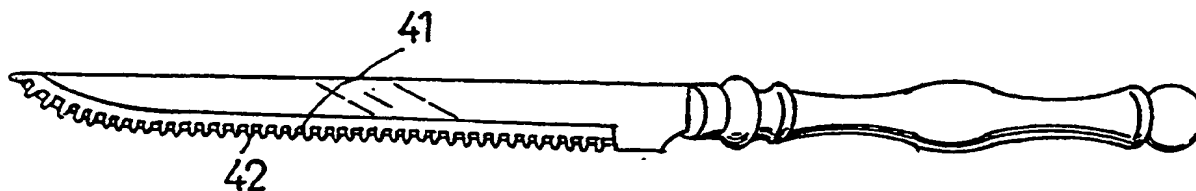
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KINGS PATENT AGENCY LIMITED 73
Farringdon Road
London EC1M 3JB(GB)(54) **Safety blade.**

(57) A safety blade has a cutting edge 41 formed with a plurality of protrusions or projections 42 extending in front of the blade in a comb structure which extends from one end of the cutting edge to the other. The projections prevent the edge from

contacting skin, but do not prevent the cutting edge from performing its function. Such a blade may be used in razors, kitchen utensils and cutlery, such as ~~steak or fruit knives, or craft tools or the like.~~

**FIG.4****EP 0 451 381 A1**

The present inventions relates to safety blades for use for example in knives, razors and other cutting tools.

A conventional cutting tool is in general provided with a blade having a straight or serrated cutting edge, depending on the intended purpose of the tool, whether for sawing, scraping, or cutting through. Careless use of cutting tools often leads to injury on the blade however, but attempts to improve safety, by sheilding the blade for example, often compromise the effectiveness of the tool. Three prior art cutting tools are shown in Figs. 1 -3 of the accompanying drawings. In Fig. 1, a disposable razor is shown, wherein a double edged razor blade 11 is inserted into the blade cartridge 131 of razor 13 by a blade injector 12. Use of this razor is very convenient and no power is required, but the edge 11 of the blade and the corner points 111a often go deep and scratch and hurt the user's skin, and when removing the blade 11 from the cartridge 131 of razor 13, the user can be hurt, and this arrangement is inherently unsafe.

As shown in Fig. 2, a conventional electric razor has the advantage of never hurting the user's skin, but has the following disadvantages: it has to use power, and its cutters are limited by the comb grid surface so that long hairs cannot extend through the combs to be cut by the cutters when the electric shaver is pressed into contact with the user's skin. This is an example of sheilding limiting the effect of a cutting tool.

U.S. Patent No. 3,797,110, as shown in Fig. 3, makes use of a machine to stamp a metal sheet with a plurality of grooves, so that the surface of the metal sheet forms a plurality of protruding ribs. The bottom edge of the metal sheet is then ground into an incline or bevel by a grinding tool so that the grooved edge forms a sharp cutting edge, and the ends of protruding ribs, due to the grinding angle, protrude beyond the sharp cutting edge. When shaving, the edges of each pair of protruding ribs are pressed against the user's skin, which lightly contacts the cutting edge. When the shaver is sliding, the user's hair can be safely shaved. However, under the limitations of the manufacturing process, the other reverse face of the metal sheet cannot be similarly made with a plurality of protruding ribs, and thus cannot be used for shaving, so that the blade is not reversible. The grooves also tend to harbour dirt which cannot be easily cleaned and thus is unhygienic. Such a blade cannot be used like a conventional razor, which can be used reversibly, so as to enhance its convenience of use, and for cleaning the blade.

An object of this invention is to provide a safety blade which will not be able to bring its cutting edge into contact with a user's skin due to careless use or by accident.

According to the invention, there is provided a safety blade characterised in that it has a cutting edge provided with a plurality of smooth-faced and rounded projections of suitable size arranged as a comb extending from one end of the cutting edge to the other, the protuberances being integrally formed with the cutting edge.

The size and spacing of the protuberances will depend upon the intended use of the blade.

The cutting edge is divided into sections between the protuberances or projections, and the sections of cutting edge may each be straight or curved, for example arcuate.

A blade according to the invention may be adapted for use in shaving, or for household or culinary use, in cutlery and craft tools also.

The invention will be further described by way of example, with reference to the accompanying drawings, wherein:-

Fig. 1, already referred to, is an exploded view of a known safety razor;

Fig. 2, already referred to, is a perspective view of a conventional electric razor;

Fig. 3, already referred to, is a detail view of a blade made in accordance with U.S. Patent No. 3,797,110;

Fig. 4 is a view of a first embodiment of blade according to the invention, embodied in a fruit knife with a straight cutting edge;

Fig. 4-1 is an enlarged view of part of the cutting edge and projections formed thereon;

Fig. 4-2 is a further enlarged sectional view of the cutting edge and a projection in the Fig. 4 embodiment;

Fig. 5 is a perspective view of a second embodiment of the invention in a pencil sharpening knife with a straight cutting edge;

Fig. 6 is a perspective view of a third embodiment of the invention in a fruit knife with a corrugated cutting edge;

Fig. 7 is a perspective view of a fourth embodiment of the invention as a pencil sharpening knife with a corrugated or fluted cutting edge; and

Fig. 8 is a perspective view of a fifth embodiment of the invention, in the form of a razor blade.

As shown in Figs 4 and 5, a straight cutting edge 41 or 51 respectively is provided with a plurality of smooth faced, rounded and suitably spaced projections or protuberances 42 (52), of suitable dimensions arranged in the form of a comb to project in front of the cutting edge 41 (51).

As shown in Figs. 6 and 7, a corrugated or fluted cutting edge 61 (71) is provided with a plurality of smooth faced, rounded and equally spaced projections or protuberances 62 (72) of suitable dimensions and similar to those in Figs. 4

and 5, and arranged as a comb projecting in front of the extremity 61a (71a) of the cutting edge 61 (71).

In Figs. 4 and 5, the sections of cutting edge between the projections are straight, whilst in Figs. 6 and 7 the sections of cutting edge between the projections are curved or arcuate.

As shown in Fig. 8, a cutting edge 81 of a razor blade is provided with a plurality of smooth-faced and rounded projections or protuberances 82, of suitable size, arranged to form a comb extending from one side to the other of the cutting edge. These projections 82 project slightly ahead of the sharp cutting edge 81 and are integrally formed with the sharp cutting edge 81. When using this razor, these projections 82 first contact the user's skin which is pressed by the projections and can only slightly enter between the projections to contact the cutting edge 81, no matter how much pressure is exerted on the blade, so that the cutting edge 81 just contacts the skin for shaving the beard or other hair, but can never penetrate the user's skin, thus ensuring safety in the shaving operation.

In this example, the smooth-faced and rounded projections or protuberances 82 on the cutting edge are similar in general form to a plurality of conical members, the bases of which merge with the cutting edge 81 but do not project ahead of the cutting edge 81. This embodiment therefore provides a razor which, like a conventional razor, is fully reversible, as both faces can be used for shaving.

Claims

1. A safety blade, characterised in that it has a cutting edge provided with a plurality of smooth-faced and rounded projections of suitable size arranged as a comb extending from one end of the cutting edge to the other, the projections being integrally formed with the cutting edge.
2. A blade according to Claim 1 wherein the cutting edge is divided into sections between the projections, and the sections are straight.
3. A blade according to Claim 1 wherein the cutting edge is divided into sections between the projections, and the sections are curved or arcuate.
4. A knife, razor or other cutting tool including a blade according to any one of Claims 1 to 3.

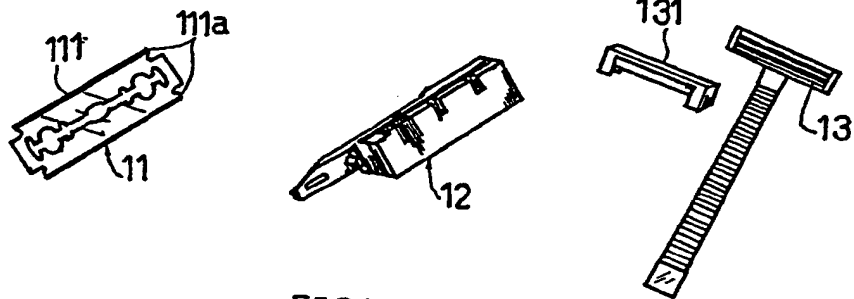


FIG.1

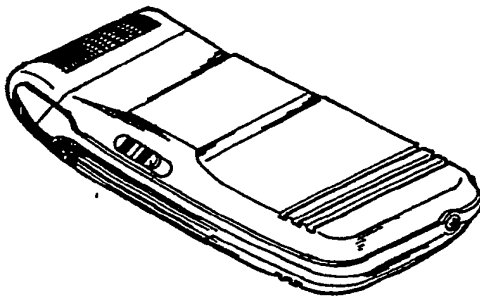


FIG.2

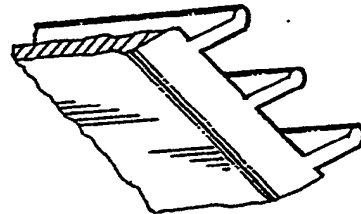


FIG.3

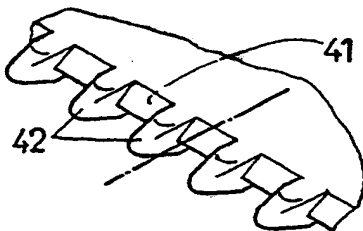


FIG. 4-1

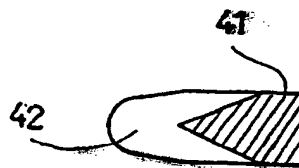


FIG. 4-2

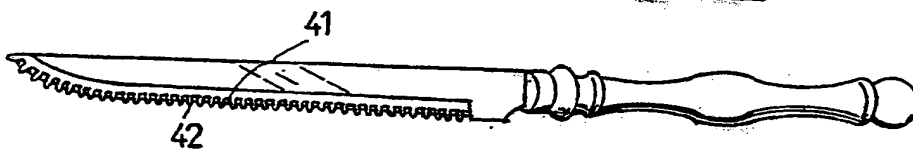
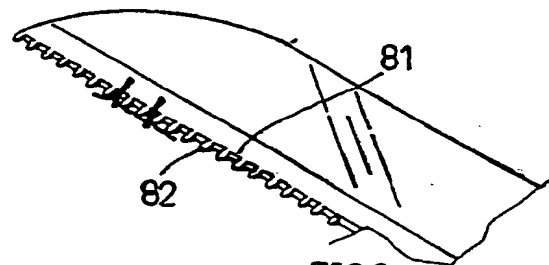
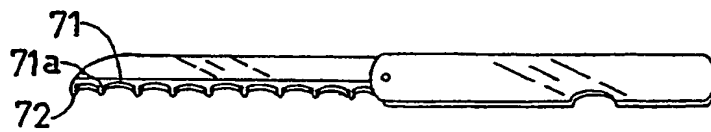
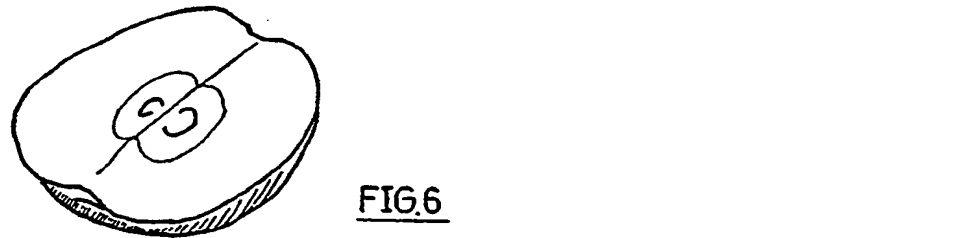
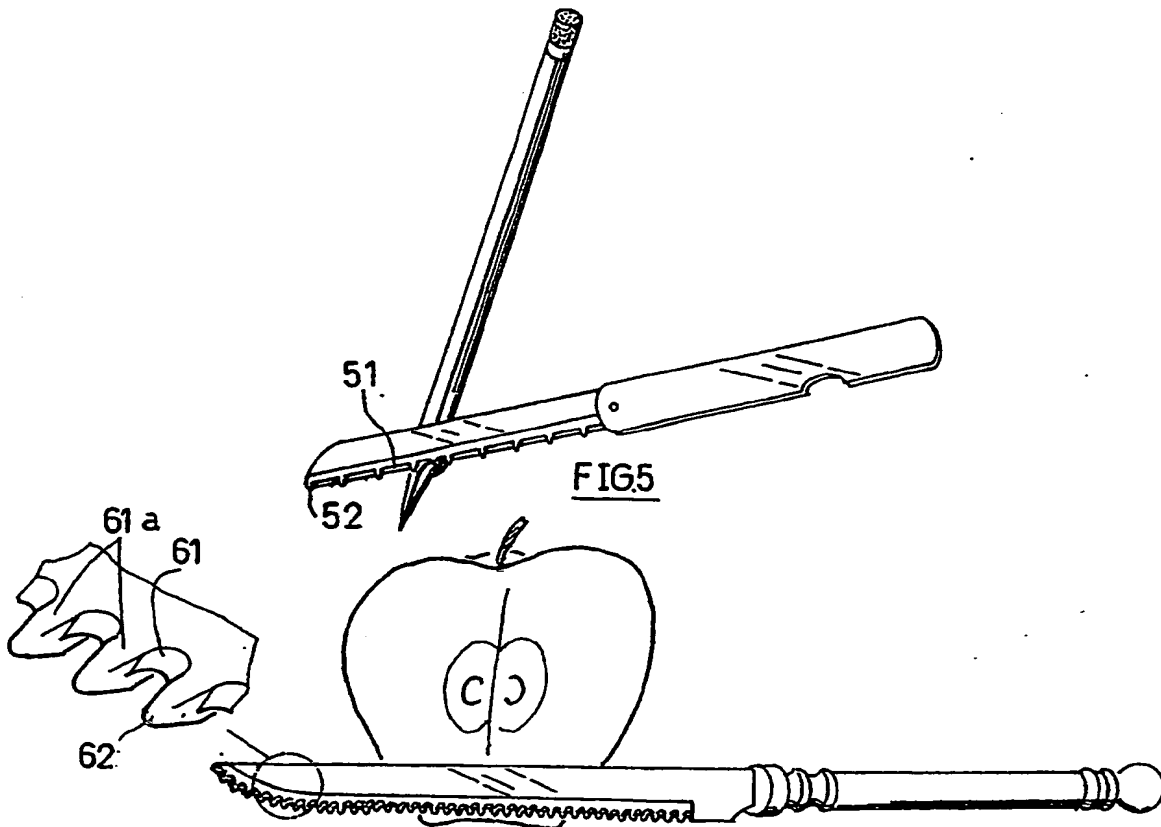


FIG.4





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EUROPEAN SEARCH REPORT

Application Number

EP 90 30 3847

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
X	US-A-4 912 846 (YING MING YU) * the whole document * -----	1-4.	B 26 B 21/56
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			B 26 B
The present search report has been drawn up for all claims			
Place of search		Date of completion of search	Examiner
The Hague		05 December 90	WOHLRAPP R.G.
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			